

Notice of Allowability

Application No.

10/766,121

Examiner

Wenpeng Chen

Applicant(s)

LIU, CHENGJUN

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to RCE and amendments filed on 8/10/06.
2. ☒ The allowed claim(s) is/are 1, 3-5, 7, 10-16, and 28-39 (now renumbered as 1-5, 10-12, 17-20, 6-9, 13-16, and 21-24, respectively).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

WENPENG CHEN
PRIMARY EXAMINER

Wenpeng Chen 9/25/08

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/16/2006 has been entered.

Examiner's Amendment/Statement

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Jeffrey Kaplan on 9/25/2006.

The application has been amended as follows:

In claims

-- Replace Claim 1 with the following:

1. (Currently amended) A method of representing features in an input image to classify the input image as face or nonface, said method comprising; forming vectors from normalized amplitude projections along rows and columns of said image, concatenating said vectors to arrive

Art Unit: 2624

at a result, and subtracting a mean and dividing by a standard deviation to normalize said result, said normalized result being a discriminating feature analysis (DFA) vector, said step of concatenating including processing a Haar representation of said input image and said input image itself.

-- In Claim 4, replace [model] in line 2 with - form models of-

Examiner's Statement of Reasons for Allowance

3. Claims 2, 6, 8-9, 17-27 are canceled by the applicants.

4. Claims 1, 3-5, 7, 10-16, and 28-39 (now renumbered as 1-5, 10-12, 17-20, 6-9, 13-16, and 21-24, respectively) are allowed.

The following is an examiner's statement of reasons for allowance. The prior art fails to teach the methods of Claims 1, 10, and 13 which specifically comprise the following features in combination with other recited limitations:

for Claim 1,

-- *forming vectors from normalized amplitude projections along rows and columns of said image;*

-- *concatenating said vectors to arrive at a result;*

-- *subtracting a mean and dividing by a standard deviation to normalize said result, said normalized result being a discriminating feature analysis (DFA) vector;*

Art Unit: 2624

-- said step of concatenating including processing a Haar representation of said input image and said input image itself.

for Claim 10,

-- calculating Gaussian PDFs (Probability Density Functions) of images classes of said first type and of said second type using a single multivariate Gaussian PDF;

-- utilizing said Gaussian PDFs in conjunction with at least one input image to classify said input image as either being of a first type or of a second type;

-- wherein the PDFs of the face and nonface classes are calculated only after first calculating a DFA (Discriminating Feature Analysis) vector of each of a plurality of training images;

-- wherein said DFA vectors are derived by combining said training images, respective 1-D Haar representations of said training images, and respective amplitude projections of said training images;

-- wherein said DFA is derived by utilizing the amplitude projections along rows and columns of said images to form a plurality of vectors, normalizing said plurality of vectors, concatenating all of the normalized vectors, and then normalizing the combined vectors.

for Claim 13,

-- modeling a face class of images, wherein images outside said face class of images are nonfaces within a nonface class;

-- modeling a subset of said nonfaces which lie closest to said face class, wherein said nonfaces in said subset are support nonfaces;

-- wherein (1) a 1-D Haar representation, (2) an input image, and (3) amplitude projections are calculated for the images and utilized in said modeling;

Art Unit: 2624

-- wherein said method comprises *forming a first set of feature vectors from difference images, normalizing said first set of feature vectors, concatenating said normalized vectors to form a different feature vector, and normalizing said different feature vector.*

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wenpeng Chen whose telephone number is 571-272-7431. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications and 571-273-8300 for After Final communications. TC 2600's customer service number is 571-272-2600.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Application/Control Number: 10/766,121
Art Unit: 2624

Page 6

Wenpeng Chen
Primary Examiner
Art Unit 2624

September 25, 2006

A handwritten signature in black ink, appearing to read 'Wenpeng Chen', with a stylized, flowing script.